

REMARKS

Reconsideration and allowance of the present application based on the following remarks are respectfully requested.

Upon entry of the foregoing amendments, claims 15, 16, and 18-33 will be pending and reexamination will show that the now pending claims are in condition for allowance.

With regard to the Claim Objections as set forth on page 2 of the Action, the amended and added claims are free of the improper multiple claim dependencies. Applicants appreciate the effort by the Examiner in examining all of the originally presented claims, including those considered to be improperly multiple dependent.

The amended and newly presented claims are also free of the language found to be indefinite for the reasons explained on page 3 of the Action.

Accordingly, all of the pending claims are free of objection and comply with 35 USC 112, first and second paragraphs.

Furthermore, for the reasons to be discussed below, the claims also define subject matter which is both novel and non-obvious.

As will be seen from the amended claims, the subject matter to which the pending claims are directed relates to the method or process for "drop-on-demand" ink jet printing, as set forth in Claim 15. Claim 16 is directed to a substrate printed by the invention method.

The new dependent claims 18-29 correspond to original claims 2-5 and 7-14, respectively, but depending from amended Claim 15, which is re-written in independent form, with the additional feature that the weight ratio of  $(T-(-O-A-CO)_n-)_p$  to Z is from 7:1 to 20:1 (see page 3, line 7) and that the number-average molecular weight of the residue Z is from 5,000 to 100,000 (former claim 6). Claim 18 and new claims 30 and 31 set forth even more preferred ratios of from 9:1 to 13:1, 7:1 to 13:1 or 10:1 to 13:1 (see page 12, line 3), respectively. Claims 32 and 33, are directed to the alternative embodiments where Z is either a residue of polyamine or a residue of polyimine.

Reconsideration and withdrawal of the rejection of claims 1-4 and 6-7 as anticipated by Thetford, U.S. 5,700,395, is respectfully requested for at least the following reasons.

While Applicants do not agree that the dispersants disclosed by Thetford in U.S. 5,700,395, meet the limitations set forth in former claims 1-4 and 6-7, in view of the cancellation of these claims, this rejection is avoided and should be withdrawn.

Reconsideration and withdrawal of the rejection of claims 1-7 and 10, as anticipated by GB 2001083, is respectfully requested for at least the following reasons.

While Applicants do not agree that the broad disclosure of dispersants disclosed by GB 2001083, meet the limitations of former claims 1-7 and 10, the cancellation of these claims renders this rejection moot. Accordingly, withdrawal of this rejection is appropriate and is respectfully requested.

Reconsideration and withdrawal of the rejection of claims 1-9 and 13-16, under 35 U.S.C. § 102(a), as anticipated by Schofield et al (U.S. 5,837,046) (US '046), using GB 2001083 (GB '083) as evidence, is respectfully requested for at least the following reasons.

In this rejection, the Examiner notes that US '046 refers to GB '083 for disclosing suitable dispersants for the ink jet inks which are the subject of US '046. However, since the disclosure of GB '083 does not effectively describe the instant class of dispersants, the use of GB '083 as evidence, does not lead to an anticipatory disclosure of the presently claimed method.

According to GB '083, dispersing agents are prepared from the reaction product of a poly(lower alkylene)imine with a polyester having a free carboxylic acid group, in which there are two polyester chains attached to each poly(lower alkylene)-imine chain (see, Claim 1). The polyester may be derived from a hydroxycarboxylic acid, including 12-hydroxystearic acid. The poly(lower alkylene)imine may have an average molecular weight in the range of 5,000 to 100,000.

According to the disclosure on page 1, lines 51-52, the weight ratio of polyester to polyalkylene imine may be in the range of from 1 to 10, the preferred ratio being from 2 to 5 (page 1, lines 52-54; claim 8).

In fact, looking at the exemplified embodiments on pages 3 and 4, in all of the examples, the weight ratio is either about 1:1 (Agent A) or about 2:1 (Agents B, C, F, G, H, J and K). Agents D and E are quaternary ammonium salts and Agent I is derived from ricinoleic acid and, therefore, are not particularly relevant.

Since the only dispersants described in GB '083 do not fall within the terms of the present claims, even if GB '083 provides evidence of the types of dispersants useful for the ink compositions and method of US '046, the disclosure of US '046 would still not anticipate any of the pending claims.

Accordingly, withdrawal of the rejection applied to pending and amended claims 15 and 16, or any of the pending claims 18-29, as anticipated by US '046 with GB '083 as evidence, is respectfully requested.

Claims 8-9 stand rejected under 35 USC 103(a) as unpatentable over either Thetford

Although Applicants do not agree that this combination of references provide evidence of *prima facie* obvious, reconsideration and withdrawal of this rejection in view of the cancellation of claims 8 and 9 is respectfully requested.

Similarly, the rejection of claim 10, as obvious over US '395 or US '046, and the rejection of claims 11-12 as obvious over US '395, GB '083, or US '046, any of which is considered in view of WO 97/15633 (WO '633), are moot in view of the cancellation of these claims. Accordingly, withdrawal of the rejections in paragraphs 11 and 12 of the Action (page 10) is respectfully requested.

Finally, claims 1-16 stand rejected under 35 USC 103(a) as unpatentable over WO '633 in view of GB '083. Reconsideration and withdrawal of this ground of rejection as applied to the original and pending claims is respectfully requested.

According to WO '633 a dispersant for ink jet dispersion inks has basic or acid groups and a non-destabilising amount of a neutralizer for these groups. Examples of the dispersants are mentioned on page 7, lines 5-11. This description, either in general terms or by specific examples, does not describe the dispersants used in the present invention.

Therefore, the Examiner is additionally relying on GB '083 for the specifics of the dispersing agents which may purportedly be used in the inks and printing methods of WO '633. However, as described above, the disclosure of GB '083 also fails to disclose any dispersing agents within the scope of the present claims.

Selection of the dispersing agents wherein the weight ratio of  $(T\text{--}(-\text{O}\text{--}A\text{--}CO)_{n-})_p$  to Z is at least 7:1 have unexpectedly superior properties which could not have been predicted based on the disclosures of the prior art. As evidence of such superior properties, the Examiner is referred to the examples and comparative examples in the specification.

In particular, reference is made to the Comparative Dispersant A, which, as described on page 8, lines 7-8, corresponds to the dispersant Agent H of Example 7 of GB '083. This dispersant has a weight ratio of 3.5:1. As may be readily seen from Table 2, page 8, inks prepared using the Comparative Dispersant A, are quite inferior with respect to the Receding Meniscus Velocity (RMV), as compared to the inks using the dispersants 1, 2 or 3, according to the present invention, wherein the ratios were 7:1, 10:1 and 13:1, respectively (see, page 7, line 25 to page 8, line 3). As reported in Table 2, the values of RMV increased from 7.9, for Dispersant A, to a minimum of 8.7 (Dispersant 3) and as high as 10.0 (Dispersant 2).

The combined disclosures of WO '633 and GB '083, would not have suggested this improvement and, would have, in fact, led away from the instant ratios.

Accordingly, it is respectfully submitted that any evidence of *prima facie* obviousness, is effectively rebutted by the showing of unexpected improvements for the presently claimed method for "drop-on-demand" printing using the defined class of dispersing agents of Formula 1, wherein the weight ratio of  $(T-(O-A-CO)_{n-})_p$  to Z is from 7:1 to 20:1, more particularly from 7:1 to 13:1, or from 9:1 to 13:1, or from 10:1 to 13:1.

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,  
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